

# TEST EXCAVATIONS AT THE MIDDLE PALEOLITHIC SITES OF QALEH BOZI, SOUTHWEST OF CENTRAL IRAN, A PRELIMINARY REPORT

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**Abstract:** The Qaleh Bozi sites, located about 25 km S-SW of Isfahan, were initially studied in 2004 by the Department of Geology, University of Isfahan and later in 2005 by a joint ICHTO-University of Isfahan team. During the 2005 field season, we began removing and screening the disturbed deposits on the floor of the largest site, Qaleh Bozi 2. These deposits proved to be rich in well-preserved and diverse macro- and micro-vertebrate remains and more than 2,000 lithic artifacts, mostly in fresh condition. We also made a small stratigraphic cut at the site and opened a test pit in the smaller rockshelter of Qaleh Bozi 3. The presence of bifacially shaped tools, especially foliate points, and some other aspects of the industry, such as the relative absence of Levallois technique, sharply distinguish Qaleh Bozi from other known Iranian Mousterian assemblages.

**Keywords:** Zagros Mousterian, Foliate points, Central Iran, Isfahan

## INTRODUCTION

Recent Middle Paleolithic discoveries on the Iranian Central Plateau indicate a rich archaeological potential for the region (Figure 2.1) although all these sites are surface occurrences which in some cases may have shallow occupational deposits. However, the recent discovery of a cluster of Middle Paleolithic cave and rockshelter sites near Isfahan, provided a good opportunity to study Mousterian assemblages in a stratified context. The archaeological potential of the sites was realized by Hossein Soleimani, a resident of the nearby small town of Hasasan Abad in 1999. He later introduced the sites to M. Yazdi at the University of Isfahan. A team from the Department of geology, University of Isfahan, directed by M. Yazdi, studied the sites and undertook excavations at Qaleh Bozi 1 in 2004 (Elhami *et al.* 2004; Javeri *et al.* 2004). Later a joint team from the Center for Paleolithic Research (National Museum of Iran), ICHTO and University of Isfahan continued the project in two other sites of Qaleh Bozi 2 and 3 in 2005 (Biglari *et al.* 2007). Here we present some results of our 2005 field season.

## THE SITES

The Qaleh Bozi sites are located about 25 km south-southwest of Isfahan, north east of Mobarakeh and north

of Hassanabad town (Figure 2.2). The sites include two rockshelters and a cave located at altitudes between 1750 to 1810 m above sea level at 32° 24' N 51° 33' E, on the southern face of a limestone mountain of lower Cretaceous age that rises to more than 500 m above the plain floor (Figure 2.3). The sites overlook a steep rocky slope and their distance from each other is between 80 – 100 m (Figure 2.4). From the cave entrance, there is a commanding view of the plain below and the Zaiandeh Rud River flowing about 2 km to the south and southeast.

## QALEH BOZI 2

Qaleh Bozi 2 is the largest site among this group. It faces the south, and opens on a steep rocky slope (Figure 2.5). The cave is more than 38 m deep, and its entrance is 16 m wide and nearly 18 m high. About two thirds of the cave floor consists of exposed bed rock that slopes sharply upward, towards the back of the cave. Archaeological deposits lie in the front part of the cave, where some massive blocks indicate a roof collapse, probably in one episode during Holocene time. This area exceeds 120 m<sup>2</sup> in extent. Roof-fall blocks are quite large, making access to in situ Middle Paleolithic deposits difficult. During the 2005 field season, we began removing and screening the disturbed deposits in the upper part of the talus slope, out of drip line. These

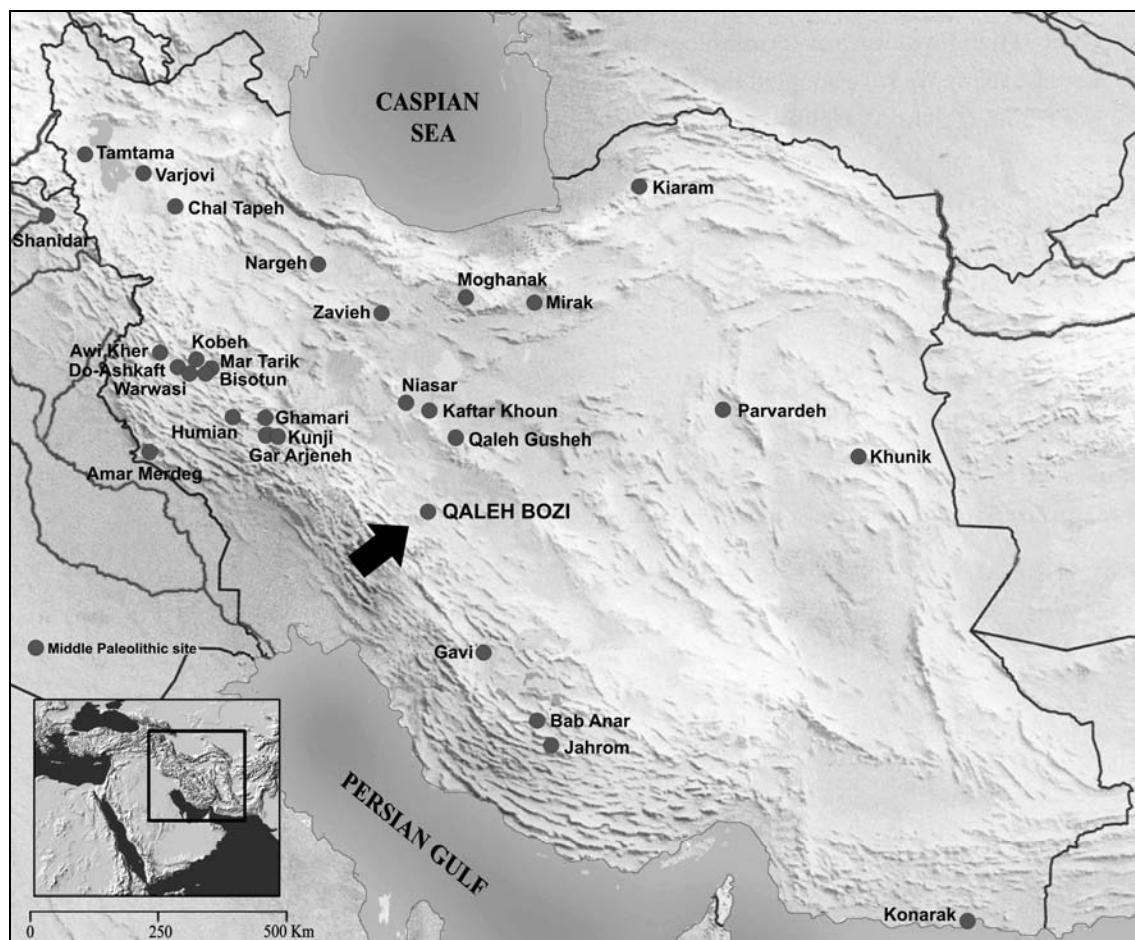


Fig. 2.1. Map of Iran showing the locations of known Middle Paleolithic sites

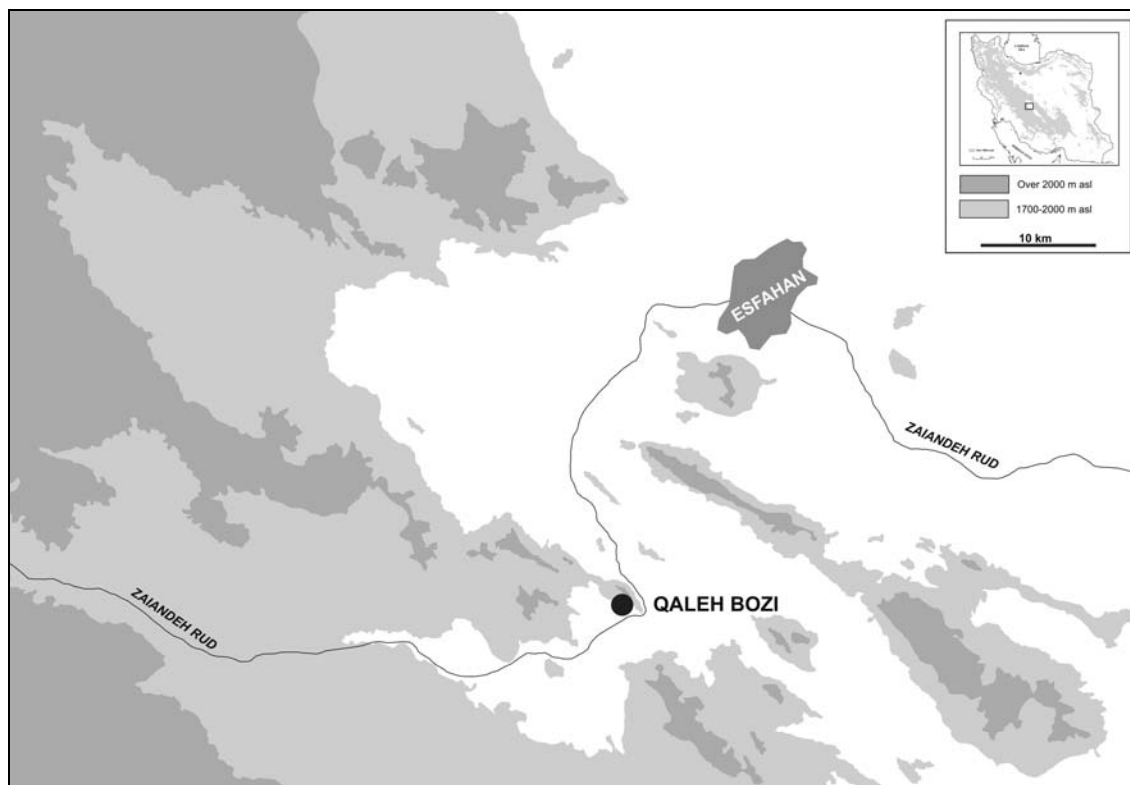


Fig. 2.2. Map of the Isfahan region showing the location of Qaleh Bozi sites

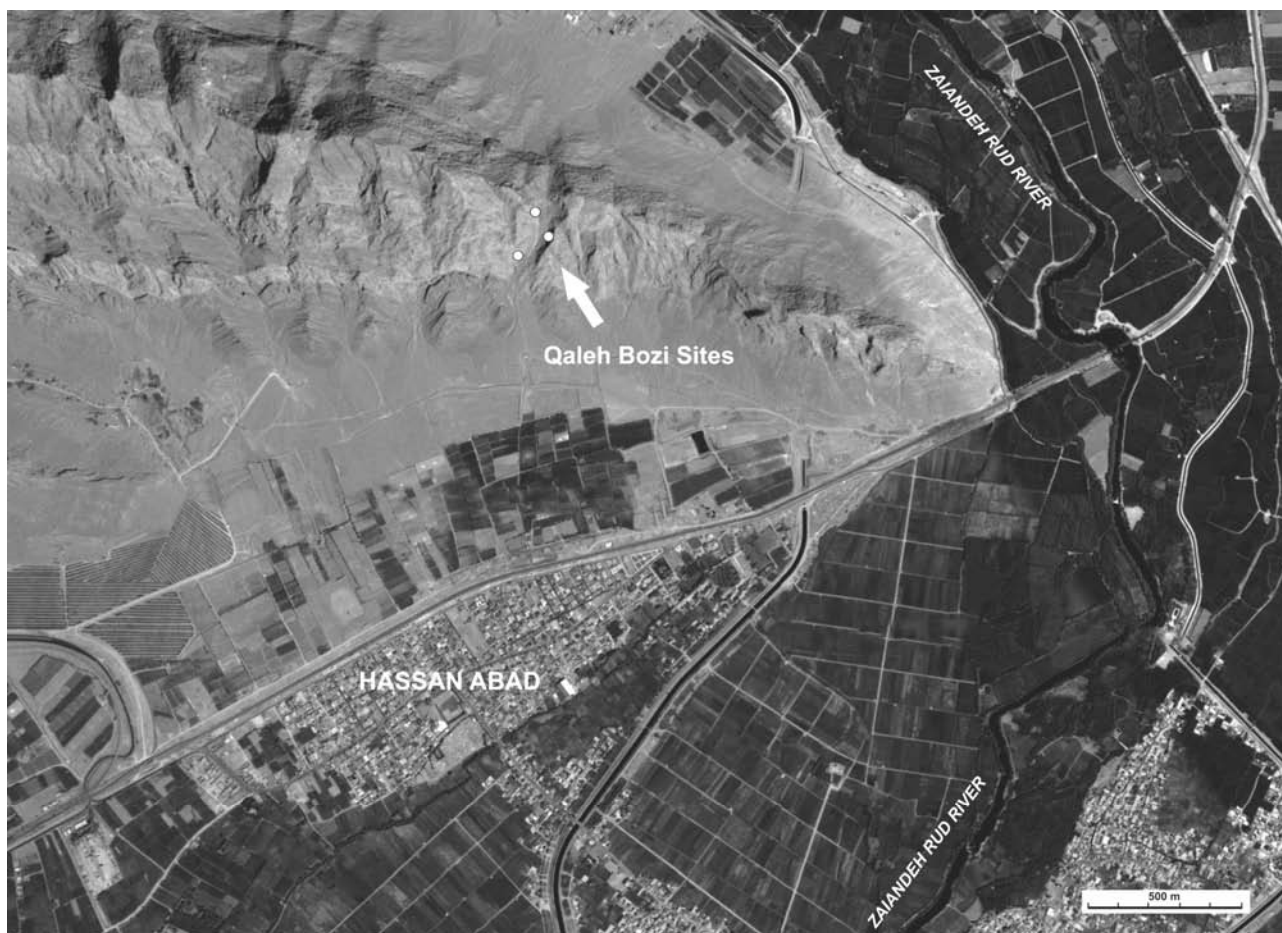


Fig. 2.3. Aerial photograph of the Hassan Abad area and the location of Qaleh Bozi sites

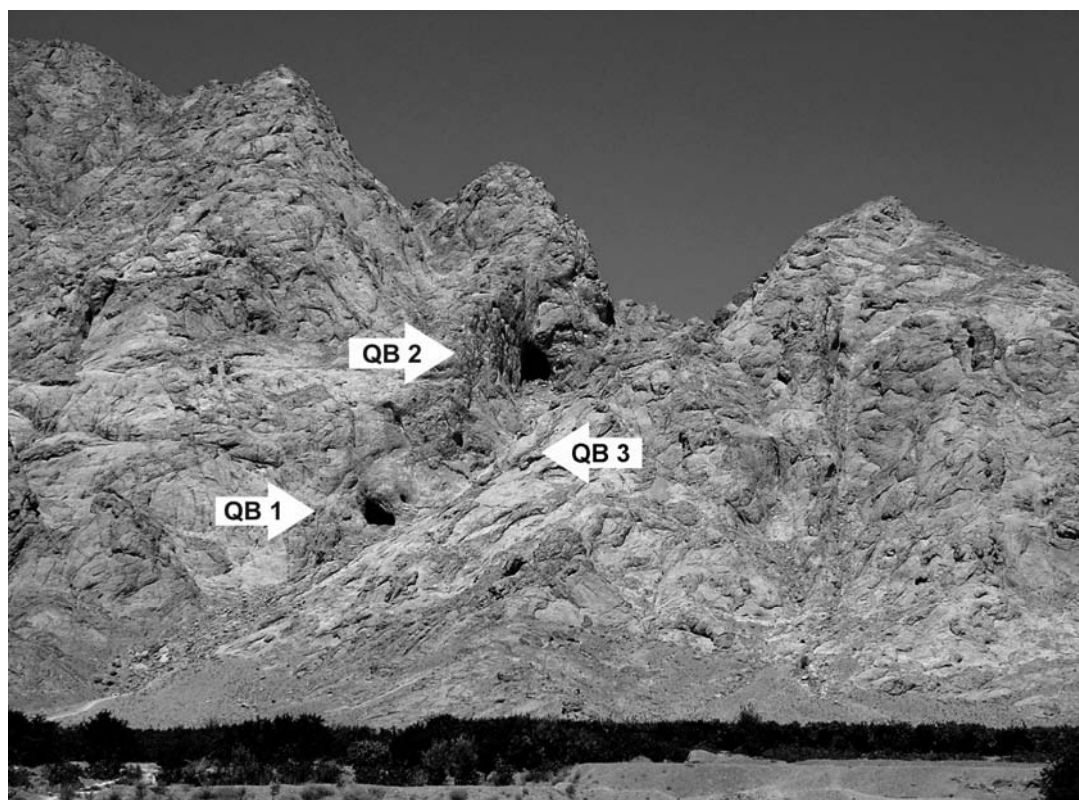


Fig. 2.4. A general view of Qaleh Bozi sites at the southern face of Qaleh Bozi mountain



Fig. 2.5. Qaleh Bozi 2

deposits proved to be rich in well-preserved and diverse macro- and micro-vertebrate remains and lithics artifacts, mostly in a fresh condition.

Looters have made some pits in various parts of the site floor, which exposed Upper Pleistocene sediments characterized by ash lenses, at some points near 40 cm in thickness. We cleaned one of the exposed sections (H 19), which yielded Middle Paleolithic material consisting of some lithics, and faunal remains. To determine the stratigraphic integrity of the site, we cut back the profile (maximum 20 cm depth and 80 cm wide), which allowed us to distinguish three main stratigraphic horizons of which two lower ones correspond to Middle Paleolithic.

### **Lithic industry**

Over 2000 lithic artifacts have been recovered from Qaleh Bozi 2, and their detailed techno-typological study is underway. Preliminary observations revealed some features of the industry that we briefly mention here.

The raw material appears imported into the site in the form of intact pebbles and cobbles and then heavily reduced at the site. These pebbles and small cobbles were collected from the Zaiandeh-Rud River flowing about 2 km to the south and southeast. Primary outcrops of these

fine-grained cherts are located at Baba Heydar area, about 160 km to north-west of the site. These were carried by the river to the vicinity of the sites.

Chain operation took place entirely at the site as shown by the high percentages of cortical flakes, some intact and tested pebbles and cobbles and cores and small debris. Façonnage technology and core reduction are present in the industry. Both hard hammerstone and probably soft hammerstone were used. There are very few Levallois elements. Tools and flakes are predominant and making up three quarters of the assemblage. The remaining artifact types consist of cores, waste and debris.

As the pebbles were usually small and removing their cortical surface would have been uneconomical, they were in most cases split by bipolar technique. Flakes were then removed using uni and bidirectional method, without platform preparation. These core forms make up about 31% of the cores, followed in frequency by centripetal (22%), chopper forms (13%), and bipolar or hammer and anvil cores (6%). Remaining core types are amorphous and other forms (Figure 2.6).

Retouched artifacts represent 25% of the total assemblage recovered at the site. Typologically various types of scrapers predominates by more than 50%, followed by the

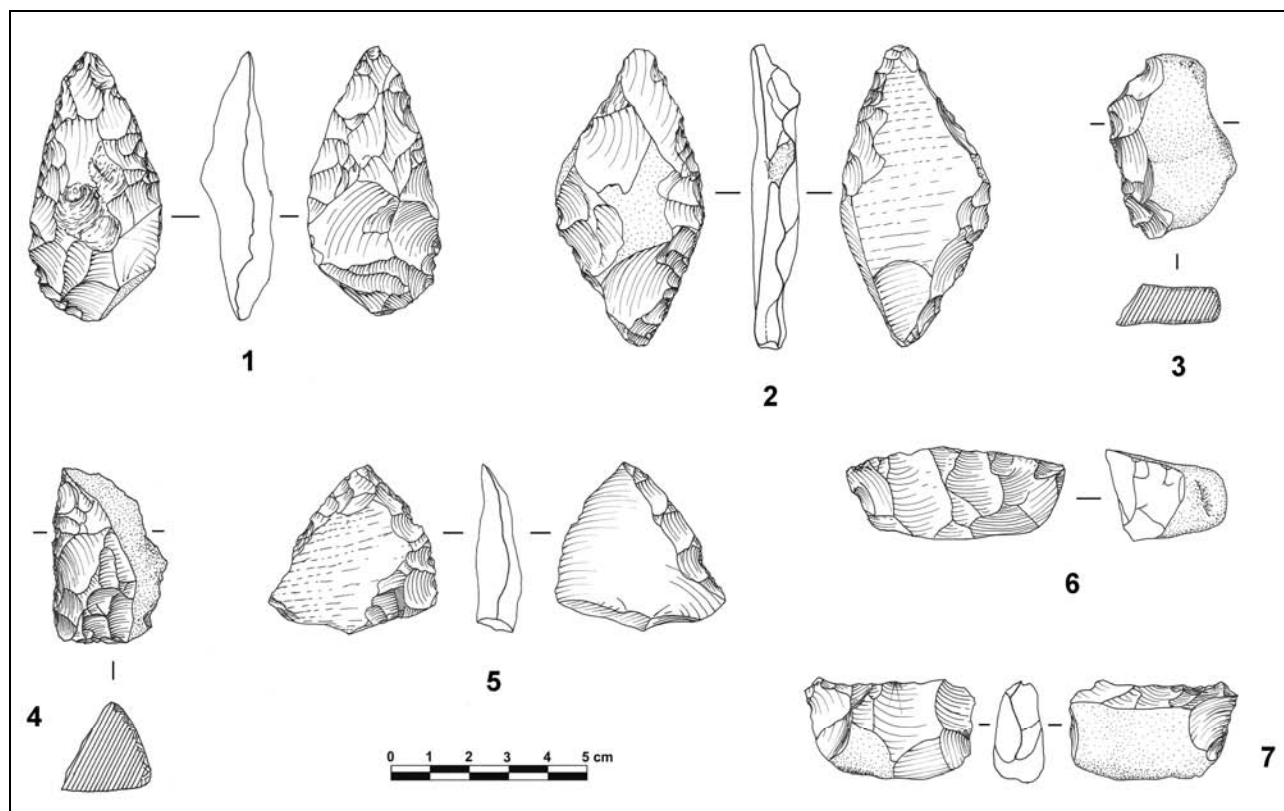


Fig. 2.6. Selected artifacts from Qaleh Bozi 2: 1. foliate point; 2. biface preform; 3. denticulated scraper; 4. Single side-scraper with Quina retouch; 5. partial bifacial point; 6. uni-directional core on pebble; 7. partial centripetal core

retouched pieces, notch-denticulates, borers and bifacial tools. In the scraper group there is a high percentage of single side-scraper. There are some examples of ventral thinning on points and scrapers. There is also a series of bifacial tools such as foliates, triangular bifaces with thick base, backed biface and bifacial knives. These forms appear as both finished forms and unfinished specimens. The presence of these unfinished pieces, indicates that at least some of these bifacial tools, has been manufactured at the site. Flakes and flat pebbles were used as blanks for bifacial tool manufacture. Bifacial tools are mostly between 35-45 mm in maximum length, although there are a few specimens with maximum length of 60-70 mm. Most of bifaces are thick and short and some have cortex at base or along the lateral edge (Figure 2.6).

### Faunal analysis

A large sample of animal bones was recovered in these shelters. The largest faunal assemblage belongs to QB2. A considerable number of shaft fragments of the limb bones were recovered in this cave. Many show impacts and breakage patterns compatible with marrow extraction. The anthropogenic activity is also evidenced in a number of burnt and cut marked bones.

The great majority of the identified remains belong to herbivores. Among the large herbivores, the dominant species are the Equids. The identified species are *Equus*

*hemionus*, *E. hydruntinus*, *E. Caballus* and another small Equid; Other identified taxa are the Rhinoceros and the Aurochs. Among the small game wild sheep and goat and gazelles were identified. The mesofauna is not very well represented despite the fact that the sediment was been intensively screened. In our preliminary study remains of Leporidae and Mustelidae were identified.

The microvertebrates present in the cave belong to various environments: The Pika inhabits rocky environments, The Gerbil and Jerboa, steppe arid zones and finally Hamster and voles inhabit grassland or covered environments. Also a Mouse tooth has been identified in the microvertebrate remains. This find is important but remains uncertain if it intrusive or not. The accumulation of microvertebrates results from the activity of Eagle Owl and rejection of pellets.

### Charcoal analysis

The analysis of 21 charcoal fragments from two Middle Paleolithic layers in profile H 19 at Qaleh Bozi 2 has allowed the identification of two different taxa. 13 fragments from sample 1 and one from sample 2 are identified as Willow or Poplar (*Salix/Populus*). Two more fragments (sample 2) could not be identified due to their bad state of preservation. Sample no. 3 did not contain charcoal fragments of sufficient size to be analyzed. 5 fragments from sample no. 4 belong to Pistachio (*Pistacia* sp.). (see Tab. 2.1.)

Tab. 2.1.

Sample n°	Context	Layer	Depth	Description	Identification	Common name
1	Section H 19	L.3/A	0.92 m	Charcoal fragments	Salix/Populus	Willow/Poplar
2	Section H 19	L.3/A	0.95 m	Charcoal fragments	Salix/Populus	Willow/Poplar
3	Section H 19	L.3/A	0.98 m	Charcoal dust	-	-
4	Section H 19	L.3/B	1.01 m	Charcoal fragments	<i>Pistacia</i> sp.	Pistachio

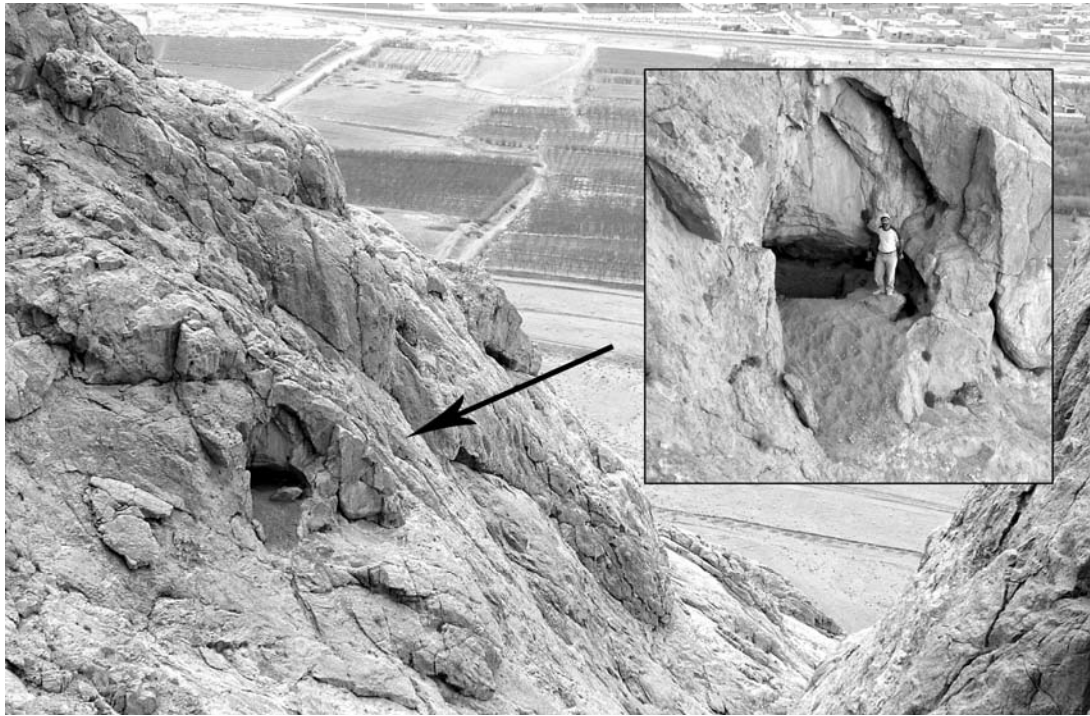


Fig. 2.7. Qaleh Bozi 3, overlooking a steep rocky slope. Close view of the site is shown in the inset

Several species of Pistachio grow in Iran (*P. atlantica*, *P. khinjuk*...) at present. Together with wild Almonds (*Amygdalus* spp.) and Hackberries (*Celtis tournefortii*, *C. caucasica*) they are part of xeric open woodlands or steppe-forests that characterize the foothills of the Zagros. From an anatomical point of view, it has not been possible to separate the two taxa belonging to the Willow or *Salicaceae* family. Both the Willow and the Poplar are hygrophilous trees that form riverine (or gallery) forests along rivers, all over Iran.

The charcoal analysis from Qaleh Bozi 2, even though restricted, shows the presence around the site of two different plant formations: open steppe-forests and riverine formations.

### QALEH BOZI 3

Qaleh Bozi 3 is a small rockshelter located about 80 m to the south of Qaleh Bozi 2. It is 5 m deep, 3 m wide, with 8 m<sup>2</sup> of interior floor space. Its low roof is only 2m high at drip line, which decreases toward the back wall. The

shelter faces northeast, overlooking a steep rocky slope (Figure 2.7). We placed a 1x1m excavation square inside the drip line, close to back wall (Figure 2.8). After cleaning the area which was partially disturbed by looters to the depth of 10 cm below the present floor, we extended excavation 50 cm to the west (D7, E7) and 50 cm to north (F5, F6). Because there was little stratigraphic variation, we choose unit-level method to establish vertical control. We excavated in arbitrary levels of 10 cm deep. All the units were excavated two levels below cultural deposits, to a depth of 180 cm. Bedrock was not encountered. We grouped arbitrary excavation levels into three major stratigraphic units, labeled I, II, and III from top to bottom (Figure 2.9).

These distinct southwardly dipping strata included:

- I. a compact and dry sediment of dark brown color, measuring from datum point about 25-30 cm thick. It contains limestone rubble measuring 2-7 cm in maximum length.
- II. a thick compact layer, light brown color (7.5 YR 6/4), clay loam and sandy clay loam sediment containing



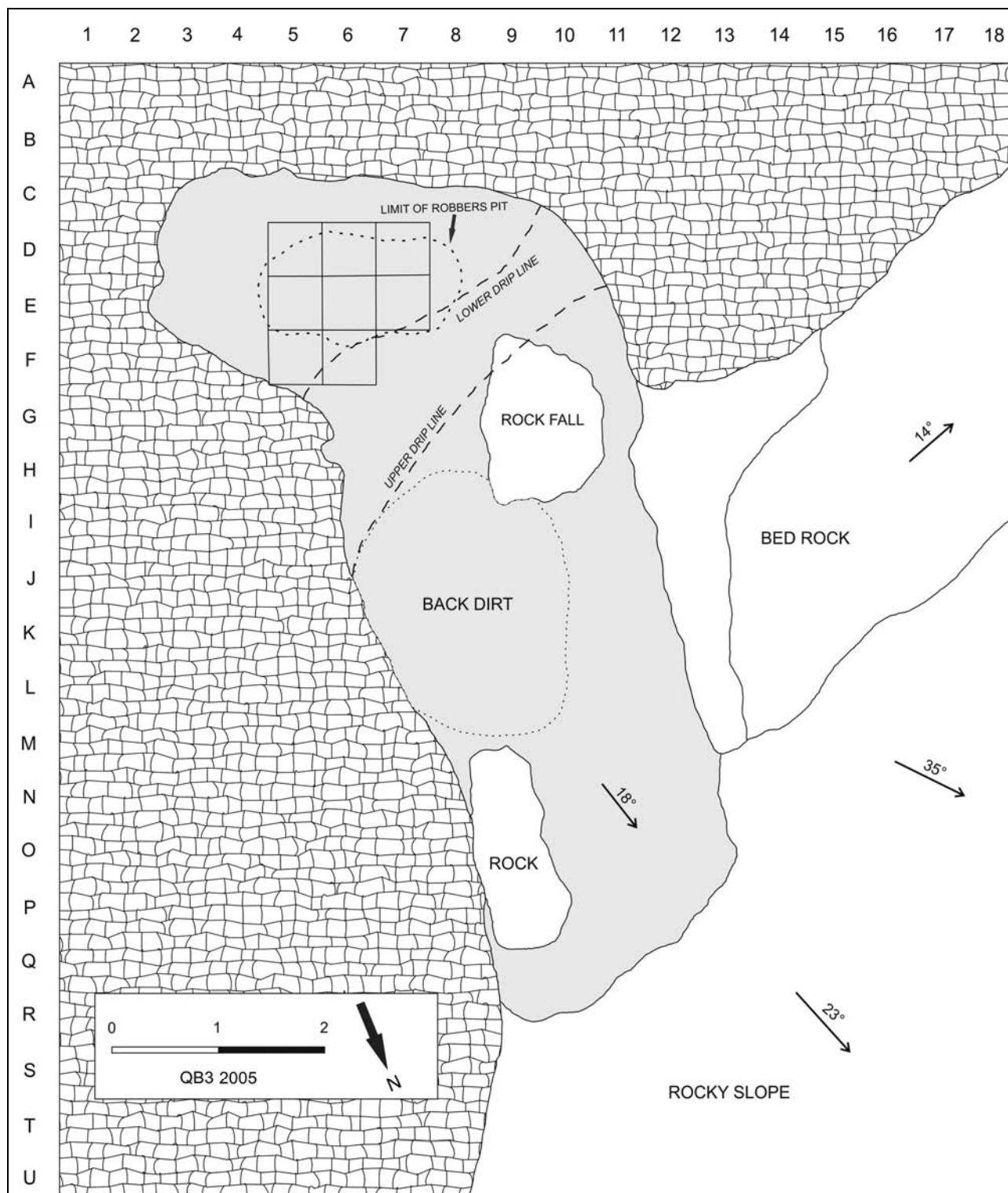


Fig. 2.8. Plan of Qaleh Bozi 3 showing position of the 2004 test pit

Middle Paleolithic material. It extending from depth of 30 cm to 160 cm bellows the datum point. There are some lenses of sandy clay deposit at southern excavated units. These deposits were accumulated in standing water depression, which likely associated to a wet period, when seasonal dripping water from cave ceiling made small basins in the cave floor.

III. a culturally sterile layer, with compact sediment, strong brown (7.5 YR 5/6) clay loam sediment containing some bone fragments and limestone debris. Due to absence of cultural remains in this layer, excavation was halted in 20 cm below its contact with layer 2.

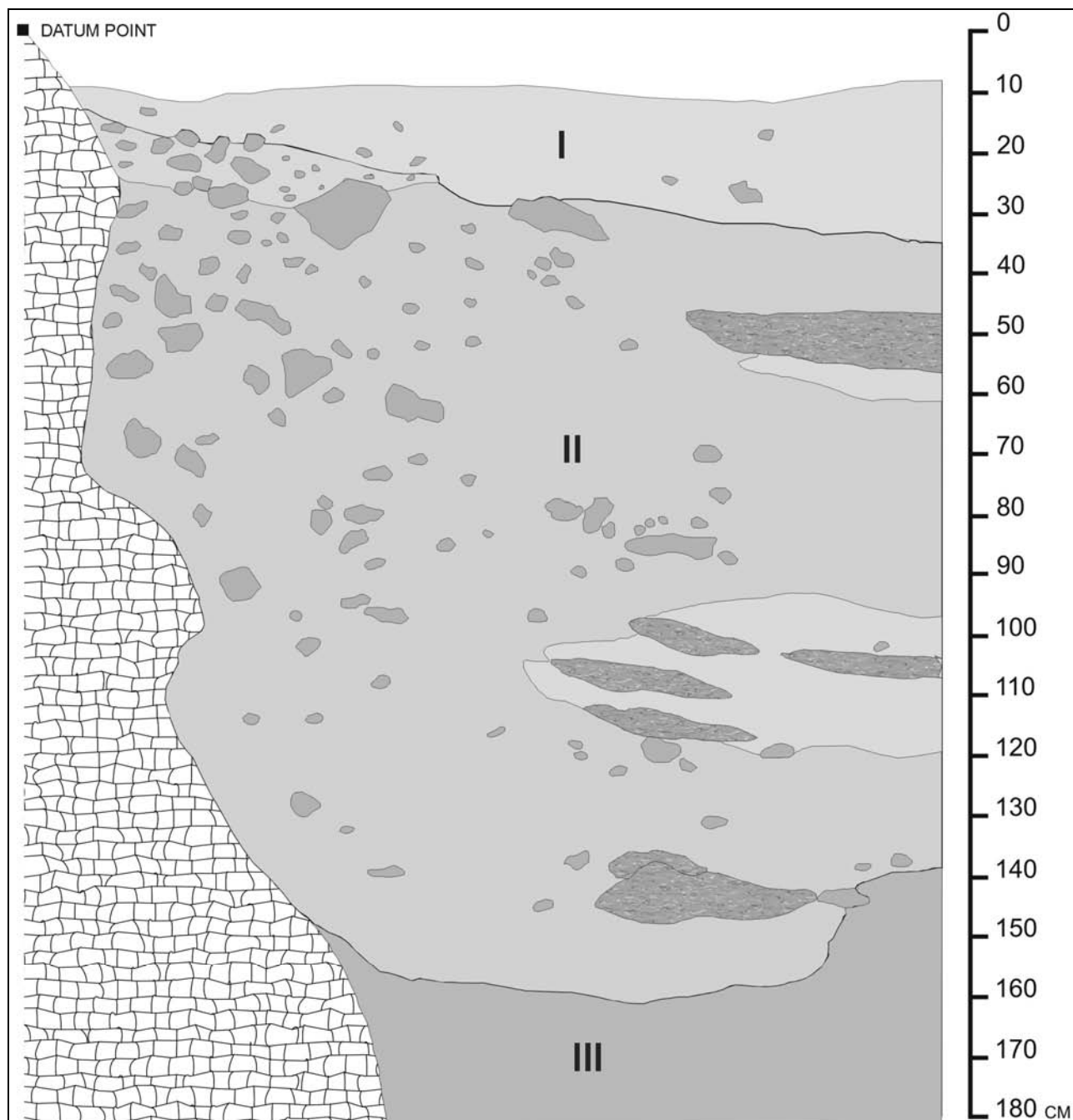


Fig. 2.9. Qaleh Bozi 3, east profile D-F 5

A column of sediment samples was collected for sedimentological analyses. Also three sediment samples from arbitrary layer 8, 11, and 17 were sent to Morteza Jamali at Laboratoire de Botanique Historique, Institut Méditerranéen d'Ecologie et de Paléocologie, for palynological analysis. Unfortunately due to poor preservation no pollen remains were found in the samples.

The excavated deposits are poor in artifacts and bones with no hearths or even charcoal fragments. Between approximately 90-150 cm below the datum (levels 9-15) the compact fill contained the main concentration of Middle Paleolithic cultural remains. Nearly 200 lithic

artifacts and about 300 bone fragments and teeth were recovered. Unfortunately the predominantly broken bones were too fragmented for identification beyond "large or medium mammals". But among the few identified species, caprids are dominant.

Some disturbance is suggested by 30 cm separation range among a refitted group of 5 flakes and a core fragment. The presence of one direct refitted group and some related pieces which had struck from same core, and technological similarities among the levels demonstrate that the assemblage comes from the same occupation period at the site which had an ephemeral nature.



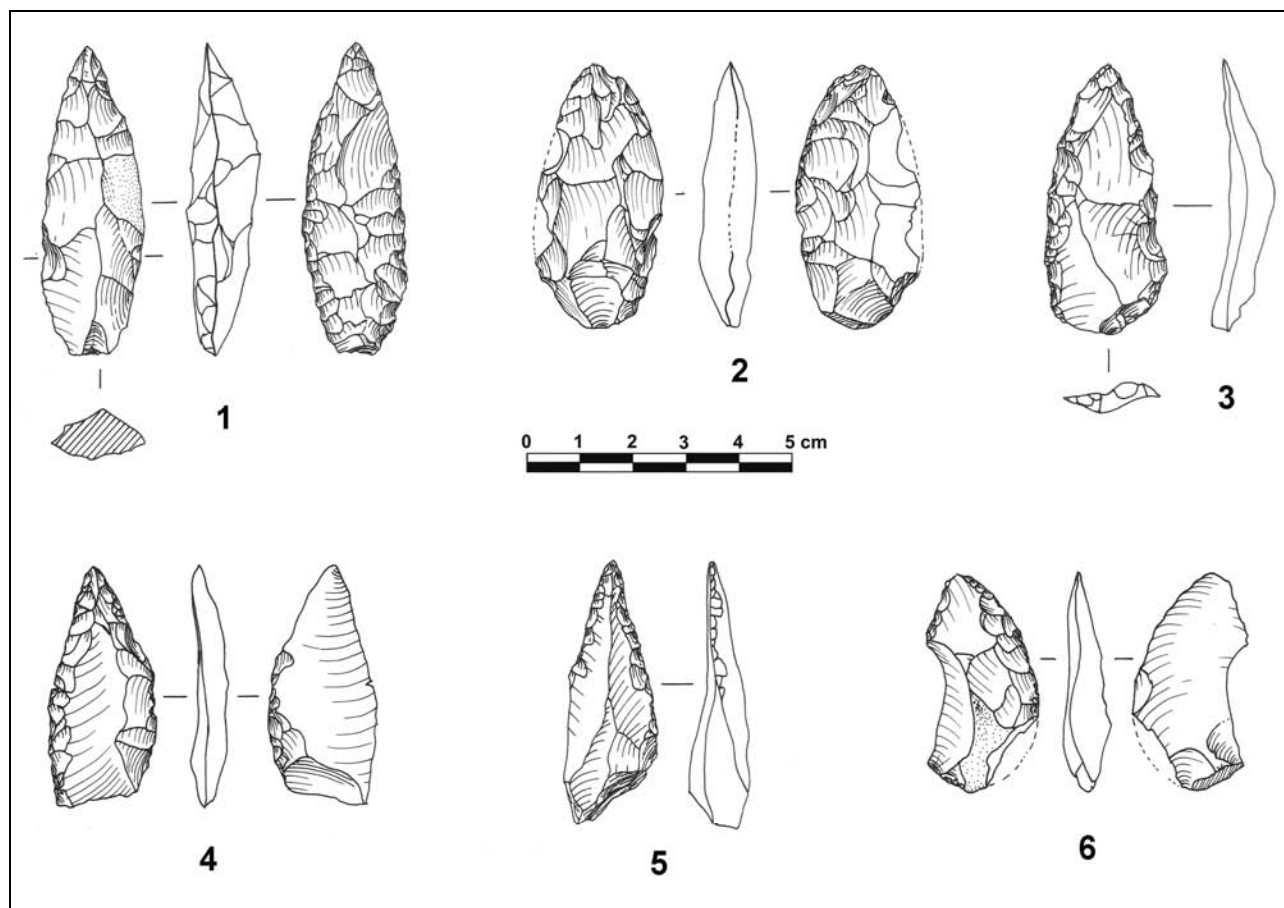


Fig. 2.10. Selected artifacts from Qaleh Bozi 3: 1. elongated foliate point; 2. foliate point; 3. Mousterian point; 4. Mousterian point with inverse retouch at ventral face; 5. Mousterian point; 6. double scraper

When excavation and sampling were finished, the test pit was filled by excavation backdirt to prevent future cave-in of the unexcavated deposit. In a recent visit of the site we realized that looters have re-opened our test pit and deepened it to a depth of about 4 m which hit the bedrock adjacent to back wall of the cave. The looter's pit did not encounter any archaeological deposits. Because examination of the backdirt failed to find any archaeological material except one bone fragment. This may indicate that the deposit under the occupation layer are accumulated through natural process and the ephemeral Mousterian occupation at the site is the first and probably the last use of the shelter by Middle Paleolithic hunter-gatherers.

### Lithic industry

The lithic artifacts were made from small river worn pebbles, similar to the used raw material in QB2 assemblage. Bifacial reduction is important in the industry, however true core reduction is also used. Except a single example, there are no Levallois elements. The assemblage characterized by high frequencies of tools, flakes and flake fragments. There are several core fragments and a thick core on flake. Bifacial tools, Mousterian points and scrapers are the dominant types, accompanied by lower frequencies of alternately

retouched convergent tools, retouched pieces and tool fragments (Figure 2.10).

The main characteristic of the tool group is the high percentage of both bifacial and unifacial points which compose about 40% of all retouched tools. Bifacial tools represent about 26% which compared to QB 2, have a higher frequency in the assemblage. They are made on both flake blanks and pebbles. Typologically they can be assigned to bifacial and unifacial foliates, backed knives and other bifacial tools (Figure 2.10).

### CONCLUSIONS

The diversity and the significant number of large species such as equids, Rhino and Aurochs, the relative absence of carnivores, the presence of thick ash lenses (in one case near 50 cm), and the presence of almost the entire chain operation in Qaleh Bozi 2, indicate a possible base camp function for QB 2, probably for a number of months on a yearly basis, during the Middle Paleolithic. But the evidence from Qaleh Bozi 3 indicates short-term stays probably related to hunting activities at the Qaleh Bozi Mountain. This is indicated by the dominance of bifacial and unifacial points in the tool-kit and also the abundance

of caprids in identifiable faunal remains, which are well adapted to rocky terrains.

In some aspects, such as high degree of resharpening and heavily retouched tools, and small size of artifacts the industry of Qaleh Bozi has closer affinities with Zagros Mousterian than it does with the Levallois dominated assemblages from central Iran. But the presence of bifacial tools and the relative lack of Levallois elements distinguish the industry from other known Mousterian assemblages in Iran which indicates that the region was not culturally uniform during Middle Paleolithic as supposed before (Lindly 2005; Skinner 1965). There is no hint of any bifacial reduction in other Mousterian assemblages from Iran, except a single example in the Mousterian assemblage of Mar Tarik cave in Bisotun (Biglari 2001; Jaubert *et al.* 2006). But ventral thinning of tools is well represented in most assemblages from the Zagros region and Central Iran.

If we do not envisage a local invention, The Qaleh Bozi industry may be intrusive to the Iranian Central Plateau and could be related to the Middle Paleolithic industries of Oman to the south or an intrusion from northern regions such as Caucasus which show more affinities with this industry. Such questions need more substantial data from this area and also other neighboring regions. Further research in these sites improves our understanding of Qaleh Bozi industry's place in larger regional and temporal contexts.

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